

**NORTH EAST QUALITY OBSERVATORY SERVICE  
(NATIONAL COLLABORATING CENTRE  
FOR INDICATOR DEVELOPMENT)**

**FOR**

**NATIONAL INSTITUTE FOR HEALTH AND CARE  
EXCELLENCE**

**INDICATOR DEVELOPMENT PROGRAMME**

**Contextual data in support of piloted indicators**

**Topic area: Chronic kidney disease**

**Pilot period:** January – March 2022

**IAC meeting date:** 14th June 2022

**Output:** Supporting contextual information, national prescribing data relating to oral non-steroidal anti-inflammatory (NSAID) drug use and findings from practice system clinical searches associated with the qualitative pilot to contribute towards recommendations for NICE indicator menu

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## Introduction

This paper presents publicly available data from NHS Digital and the CVD Prevent audit, and prescribing information based on a data request to the NHS Business Services Authority (NHSBSA). Information from clinical system searches undertaken by pilot practices is presented and described from page 19 onwards.

The relevant key findings are summarised below.

## Contextual information from publicly available data sources

### Chronic kidney disease register (QOF 2020/21)

Source: NHS Digital

The most recent QOF 2020/21 Chronic Kidney Disease (CKD) register data<sup>1</sup> shows a total number of 1,917,102 patients aged 18 or over with CKD classification of G3a-G5 in England. This represents 3.96% of the practice list size (aged 18 years and over). This varies between NHS Regions, from 2.38% in London to 4.93% in the South West (Figure 1).

Figure 1: CKD prevalence by NHS Region



<sup>1</sup> <https://digital.nhs.uk/data-and-information/data-tools-and-services/data-services/general-practice-data-hub/quality-outcomes-framework-qof>

### Chronic kidney disease indicators from Indicators No Longer in QOF (INLIQ) 2020/21

Three indicators relating to CKD were removed from QOF following the 2014/15 publication and are now published as INLIQ indicators. The latest results (2020/21) are summarised in Table 1.

Table 1: INLIQ indicators relating to CKD (2020/21)

<b>Indicator</b>	<b>Intervention rate</b>	<b>Exception / PCA rate</b>	<b>Achievement rate</b>
CKD002: Percentage of patients on the CKD register in whom the last blood pressure reading (measured in the preceding 12 months) is 140/85 mmHg or less	47.0%	4.5%	49.3%
CKD004: The percentage of patients on the CKD register whose notes have a record of a urine albumin:creatinine ratio (or protein:creatinine ratio) test in the preceding 12 months	26.4%	2.7%	27.1%
NM84: The percentage of patients on the CKD register with hypertension and proteinuria who are currently treated with renin-angiotensin system antagonists	66.7%	0.9%	67.3%

## **CVDPREVENT audit findings**

CVDPREVENT is a national primary care audit that automatically extracts routinely held General Practice data covering the diagnosis and management of 6 high risk conditions that cause stroke, heart attack and dementia: atrial fibrillation, high blood pressure, high cholesterol, diabetes, non-diabetic hyperglycaemia and chronic kidney disease<sup>2</sup>.

CVDPREVENT data is collected through the General Practice Extraction Service (GPES) by opt-in from practices, therefore will not represent the same data collected in QOF<sup>3</sup>.

The CVDPREVENT data explorer<sup>4</sup> tool includes data to September 2021, this includes indicator CVDP001CKD: Prevalence of GP recorded Chronic Kidney Disease with classification of categories G3a to G5 (previously stage 3 to 5) in patients aged 18 and over – which matches the QOF chronic kidney disease register definition. The most recent national published data for this indicator is 3.7%, and this includes further breakdowns by sex (Male 3.1%, Female 4.3%), age (18-39 0.1%, 40-59 0.9%, 60-79 7.4% and 80+ 28.7%) and deprivation quintile which shows that prevalence of CKD was lowest in the most deprived areas (unadjusted data).

The first annual report<sup>5</sup> (data to March 2020) investigated this deprivation finding further with synthetic estimates taking account of the age distribution which suggested that the prevalence of GP recorded CKD increased as populations were more deprived, the most deprived being 1.2 percentage points higher than the least deprived.

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<sup>2</sup> <https://www.england.nhs.uk/ourwork/clinical-policy/cvd/cvdprevent/>

<sup>3</sup> <https://s3.eu-west-2.amazonaws.com/nhsbn-static/CVDPREVENT/2021/CVDPREVENT%20Methodology%20Annex%20FINAL.pdf>

<sup>4</sup> <https://www.cvdprevent.nhs.uk/data-explorer>

<sup>5</sup> [https://s3.eu-west-2.amazonaws.com/nhsbn-static/CVDPREVENT/2021/CVDPREVENT\\_First%20Annual%20Audit%20ReportFINAL.pdf](https://s3.eu-west-2.amazonaws.com/nhsbn-static/CVDPREVENT/2021/CVDPREVENT_First%20Annual%20Audit%20ReportFINAL.pdf)

### **Network Contract Directed Enhanced Service (Investment and Impact Fund)**

The Investment and Impact Fund (IIF) is an incentive scheme which was introduced as part of the amended 2020/21 Network Contract Directed Enhanced Service (DES)<sup>6</sup> and was in place for 6 months, from 1 October 2020 to 31 March 2021. In this 2020/21 scheme was indicator MS01: Percentage of patients aged 65 years and over currently prescribed a non-steroidal anti-inflammatory drug (NSAID) without a gastro-protective medicine. The rationale for including this indicator in the IIF was due to the heightened risk of hospitalisation due to gastro-intestinal bleed for patients prescribed medicines in this group (no data is accessible).

The IIF for 2021/22<sup>7</sup> contained two NSAID-related indicators:

SMR-02A: Percentage of patients aged 18 years or over prescribed both a Non-Steroidal Anti-Inflammatory Drug (NSAID) and an oral anticoagulant in the 3 months to 1 April 2022, who in the 3 months to 1 April 2023 were either (i) no longer prescribed an NSAID or (ii) prescribed a gastroprotective in addition to both an NSAID and an oral anticoagulant.

SMR-02B: Percentage of patients aged 65 years or over prescribed a Non-Steroidal Anti-Inflammatory Drug (NSAID) and not an oral anticoagulant in the 3 months to 1 April 2022, who in the 3 months to 1 April 2023 were either (i) no longer prescribed an NSAID or (ii) prescribed a gastroprotective in addition to an NSAID.

As part of the Network Contract DES (2021/22) data publication<sup>8</sup>, monthly data is published for an NSAIDs-related indicator similar to those in the 2021/22 IIF<sup>7</sup>, which is NCDMI071: Percentage of patients aged 65 years or over prescribed a non-steroidal anti-inflammatory drug (NSAID), who are also concurrently prescribed a gastro protective<sup>9</sup>. It is stated by NHS Digital that the published data is under-reported in recent months due to errors in medication reference sets.

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<sup>6</sup> <https://www.england.nhs.uk/wp-content/uploads/2020/09/IIF-Implementation-Guidance-2020-21-Final.pdf>

<sup>7</sup> <https://www.england.nhs.uk/wp-content/uploads/2021/12/B1219-investment-and-impact-fund-implementation-guidance-2021-22-dec-21.pdf>

<sup>8</sup> <https://www.england.nhs.uk/wp-content/uploads/2021/12/B1218-network-contract-directed-enhanced-service-contract-specification-2021-22-dec-21.pdf>

<sup>9</sup> <https://digital.nhs.uk/data-and-information/publications/statistical/mi-network-contract-des/2021-22>

England level data for March 2022<sup>9</sup> shows that 689,066 patients in the cohort (aged 65 years and over) were prescribed an NSAID, with 636,776 (92.4%) of these also concurrently prescribed a gastro protective.

## **Oral non-steroidal anti-inflammatory drugs (NSAIDs) prescribing data from NHS Business Services Authority (NHSBSA)**

### **Background**

The NHS Business Services Authority (NHSBSA) manages and provides information relating to prescription data to NHS organisations, patients and the public. To contribute to the discussion of the findings of the practice pilot including the practice clinical searches, NCCID requested prescribing information from NHSBSA relating to patients receiving oral NSAIDs, including age and geographical distribution. The file received also presented data on patients receiving diuretics or Renin Angiotensin System (RAS) drugs in addition to oral NSAIDs, and related data from the NHSBSA's Medicines Safety Dashboard is also presented to show the consequent impact on risk of hospitalisation.

### **Methodology**

Prescribing data was extracted from the NHSBSA Data Warehouse for the period January 2019 to December 2021 for England, with data back to January 2017 searched to establish previous prescribing numbers for patients prescribed NSAIDs in the period 2019 to 2021. The NHSBSA data request extract is based on dispensing in the community that has been submitted to NHSBSA for reimbursement. NHSBSA provided a descriptive analysis of this data at England for the calendar years 2019, 2020 and 2021<sup>10</sup>, and also at GP practice level for 2021, as described in Appendix 1.

An assessment was made whether to consider patients on a 'within GP' or 'any GP' basis, with a decision made to consider patients on an 'any GP' basis (see Appendix 1 for definitions and Appendix 2 for details).

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<sup>10</sup> NHS Business Services Authority. Request DR1706: Data on oral non-steroidal anti-inflammatory drug (NSAID) use in England, 2019-2021

Whilst this report is based on the working definition for long-term use of a patient having had oral NSAIDs prescribed for 12 or more months in the previous 24, additional scenarios were explored to assess different ways of defining prescription frequency. The detail is shown in Appendix 2.

## **Key findings**

### **Total prescribing of oral NSAIDs**

The NHSBA identified 3.25 million patients as NSAID users (defined as having received at least one prescription item for oral NSAIDs in year) in 2021<sup>10</sup>. Based on an overall registered adult population in England of 48.5 million as of 1 April 2021<sup>11</sup>, this equates to 6.7% of the registered population.

### **Exploring a working long-term definition of ‘12 prescriptions in 24 months’**

The majority (1.9 million, 57.4%) of NSAID users in 2021 had only received NSAID items for one or two months (55.9% in 2020 and 57.9% in 2019), shown in Figure 2. However, in 2021, 496,092 had had oral NSAIDs prescribed for 12 or more months in the previous 24, meeting the working definition of long-term NSAID users, which equates to 1.0% of the registered adult population<sup>11</sup>. Similar proportions of long-term use were seen when considering data for patients prescribed NSAIDs in 2020 and in 2019, as shown in Table 2.

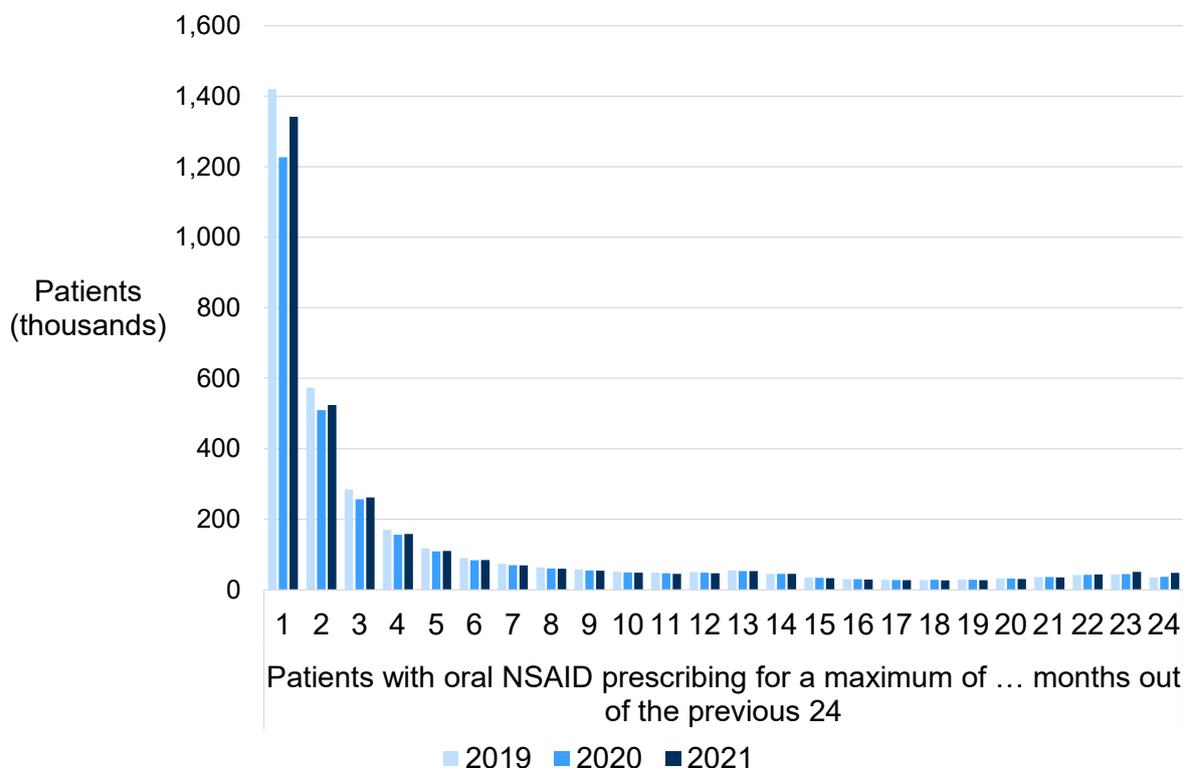
When broken down by GP practice<sup>12</sup>, about half of all practices in England had more than 60 long-term NSAID users in 2021, with 337 practices having at least 200 long-term NSAID users, as per the working definition.

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<sup>11</sup> <https://digital.nhs.uk/data-and-information/publications/statistical/patients-registered-at-a-gp-practice>, NHS Digital.

<sup>12</sup> 494,770 (99.7%) of the 496,092 patients from the prescribing information could be assigned to a currently open practice. Very small practices, with fewer than 1,000 patients registered were excluded from this analysis.

**Figure 2. Patients who have received at least one prescription item for oral NSAIDs in year, by number of months prescribed NSAIDs in the previous 24 months, England, 2019 to 2021.**

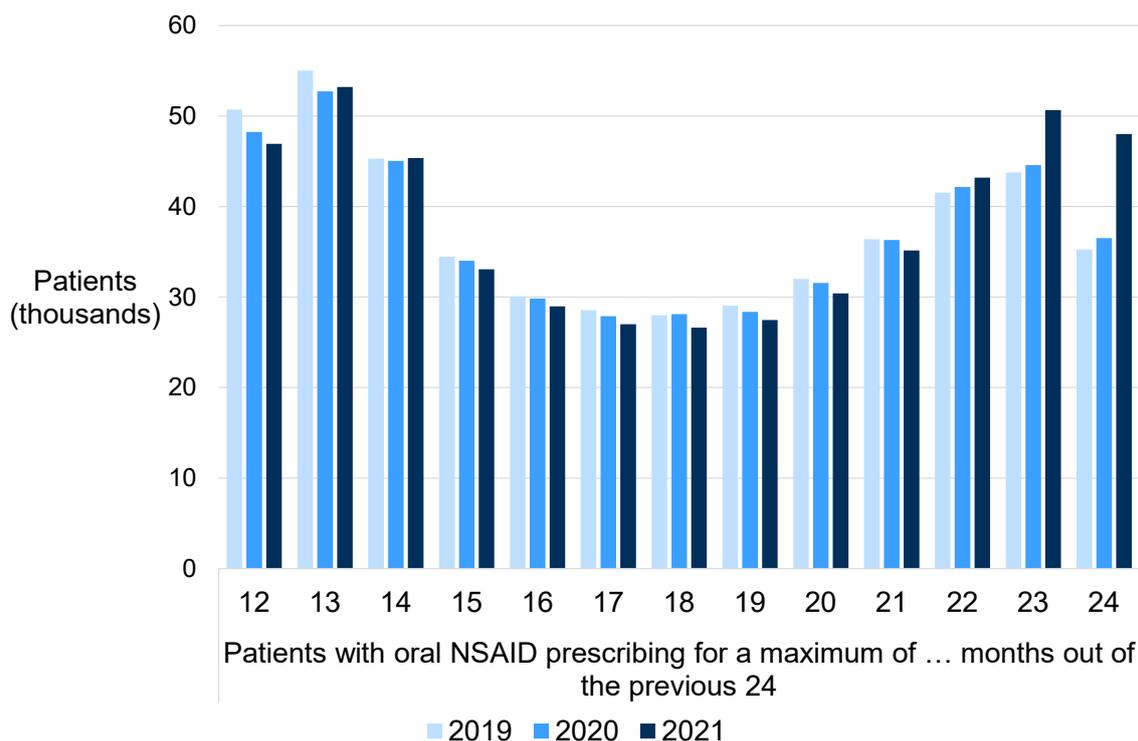


**Table 2. Numbers and percentages of NSAID users and long-term NSAID users in England, 2019 to 2021**

Year	NSAID users: Patients who had received at least one prescription item for oral NSAIDs in the year			NSAID long-term users: Patients who had received at least one prescription item for oral NSAIDs in the year, who had had oral NSAIDs prescribed for 12 or more months in the previous 24 months			
	Number	% of total registered population	% of adult registered population	Number	% of total registered population	% of adult registered population	% of NSAID users
2019	3,440,491	5.8%	7.2%	490,143	0.8%	1.0%	14.2%
2020	3,107,719	5.1%	6.4%	485,382	0.8%	1.0%	15.6%
2021	3,253,221	5.4%	6.7%	496,092	0.8%	1.0%	15.2%

For patients classed as long-term users under the working definition, (Figure 3), the mean number of months in which the patient had been prescribed NSAIDs in the last 24 months was 18.0 months; a slight increase on 2020 (17.8 months) and on 2019 (17.7 months). However, the majority of long-term users tended to either have received prescription items for NSAIDs in just over 12 months, or just under 24 months, with 29.3% in 2020 having received items for between 12 and 14 months, and 28.6% having received items for between 22 and 24 months. The two previous years have shown a similar pattern, but 2021 shows an increase at the upper end of the scale, with many more than would be expected based on the previous years' data having received prescription items for NSAIDs in 23 or all 24 of the previous 24 months.

Figure 3. Patients who meet the proposed definition of long-term NSAID use by number of months prescribed NSAIDs in the previous 24 months, England, 2019 to 2021.



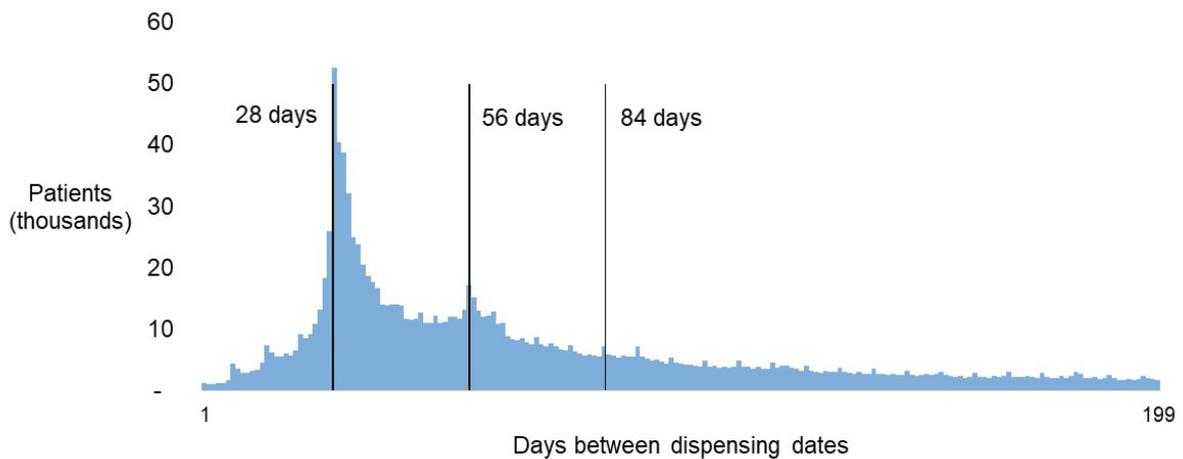
In summary, the analysis received from the NHSBSA suggests the working definition will capture the majority of long-term NSAID users, however the method may miss a small number of users who fall just outside the threshold or have less regular patterns of NSAID use.

**Potential definitions of long-term NSAID use: exploring patterns of prescribing**

1. Average interval between dispensing dates

The average interval (number of days) between dispensing dates was explored, using Electronic Prescribing Service (EPS) data only. The number of patients with Oral NSAID prescriptions dispensed in each interval group, by single days, is shown in Figure 4.

Figure 4: Patients by average number of days between Oral NSAID dispensing dates



Note: chart includes only patients with more than one dispensed date, and less than 200 days between dates.

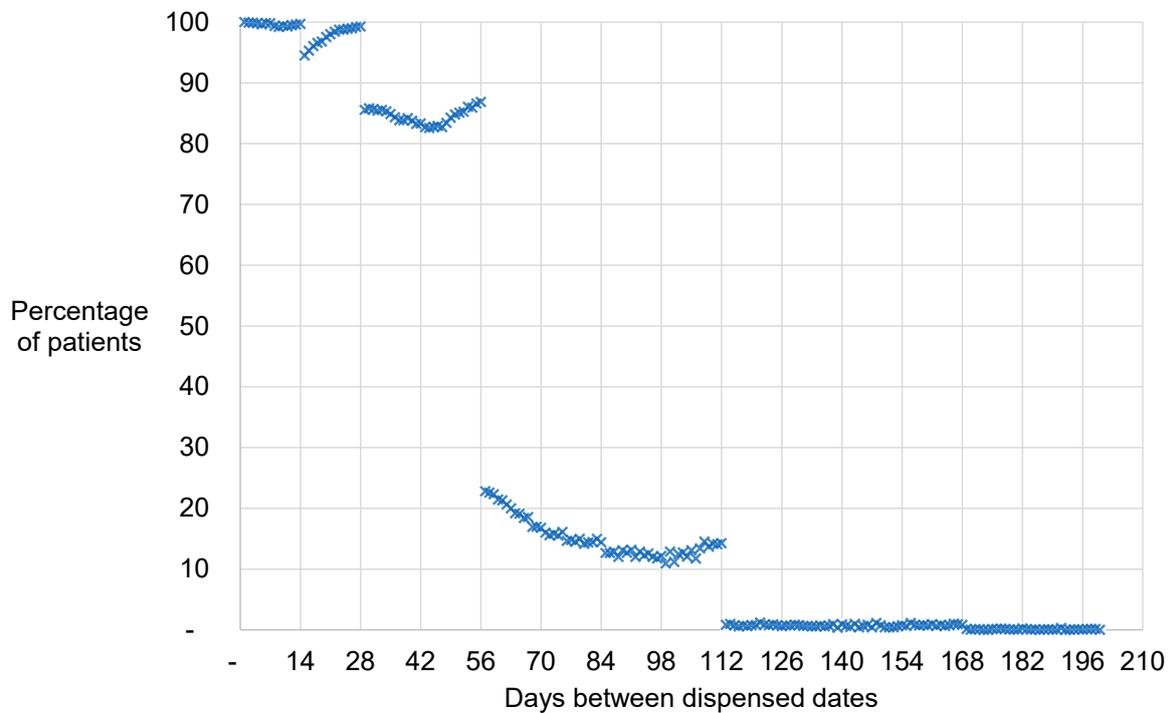
As shown in Figure 4, the most frequent average gap between dispensing dates is 28 days. There were 700,510 patients with an average gap of 56 days or less between oral NSAID dispensing dates. For regular NSAID users, this would roughly align with the working definition of 12 months in the previous 24, however this shows that there is a significant number of users who had been dispensed NSAIDs more than once in the period, with a relatively short gap, but who should not be classed as long-term users.

2. Quantity prescribed vs frequency

The relationship between quantity prescribed and frequency was explored, with an illustrative example of long-term use as ‘patients dispensed more Naproxen 500mg tablets than the number of days until they were next dispensed Naproxen 500mg tablets, limited to gaps between dispense dates of between 1 and 56 days’.

This method is able to consider both quantity and timing, and showed that patients with smaller gaps between dispensed Naproxen are much more likely to have been dispensed more tablets than 'days', with a significant drop after a gap of 56 days (Figure 5). This suggests that longer times between prescription dates are less likely to be associated with long-term daily use of Naproxen 500mg tablets. The drop at around 56 days is consistent with a dispensing pattern that would be expected to generate 12 or more dispensed dates in a 24 month period.

Figure 5. Proportion of patients dispensed more tablets than the number of days until they were next dispensed Naproxen 500mg tablets, EPS, 2021



## Exploring the working definition for specific subgroups of NSAID users

### 1. Oral NSAIDs prescribing by age: long-term users aged 65 years and above

Of the 3.25 million NSAID users in 2021, 713,051 were aged 65 or above. Based on an overall registered population in England of 10,663,170 as at April 2021<sup>11</sup>, this equates to 6.7% of the registered population in that age group (see Table 3 and Figure 6).

Although the overall pattern shown in Figure 6 is similar to that shown for all ages in Figure 2, the sharp decline shown at the left-hand side of Figure 6 is less pronounced for adults aged 65 years and above than the equivalent for all ages in Figure 2. This means that proportionately more adults aged 65 years and above had had oral NSAIDs prescribed for more than two months in the previous 24 months, suggesting a greater proportion should be classed as long-term users.

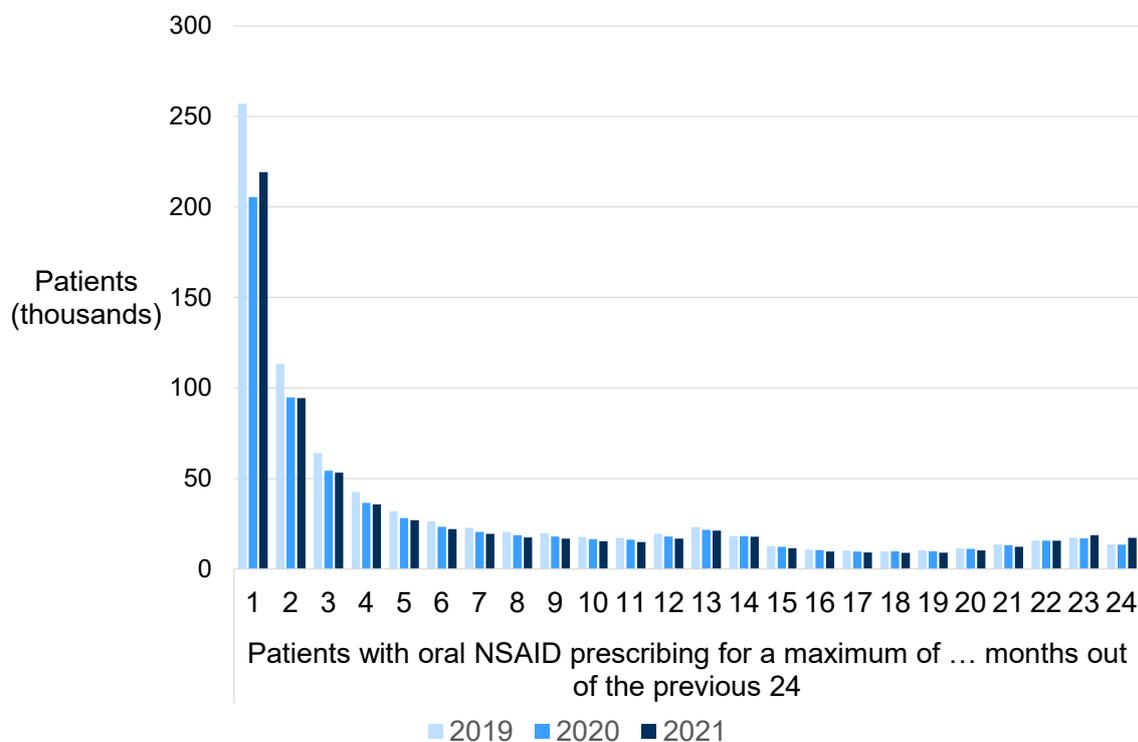
**Table 3. Numbers and percentages of NSAID users and long-term NSAID users aged 65 years or above in England, 2019 to 2021**

Year	NSAID users aged 65+: Patients aged 65 or above who had received at least one prescription item for oral NSAIDs in the year			NSAID long-term users aged 65+: Patients aged 65 or above who had received at least one prescription item for oral NSAIDs in the year, who had had oral NSAIDs prescribed for 12 or more months in the previous 24 months			
	Number	% of total registered population	% of registered population aged 65+	Number	% of total registered population	% of registered population aged 65+	% of NSAID users aged 65+
2019	818,334	1.4%	7.9%	185,586	0.3%	1.8%	22.7%
2020	711,308	1.2%	6.7%	179,262	0.3%	1.7%	25.2%
2021	713,051	1.2%	6.7%	177,737	0.3%	1.7%	24.9%

Of NSAID users aged 65 years and above, 177,737 (24.9%) had had oral NSAIDs prescribed for 12 or more months in the previous 24, meeting the working definition of long-term NSAID use. This equates to 1.7% of the registered population aged 65 years and above. Similar proportions of long-term use were seen when considering data for patients prescribed NSAIDs in 2020 and in 2019, as shown in Table 3.

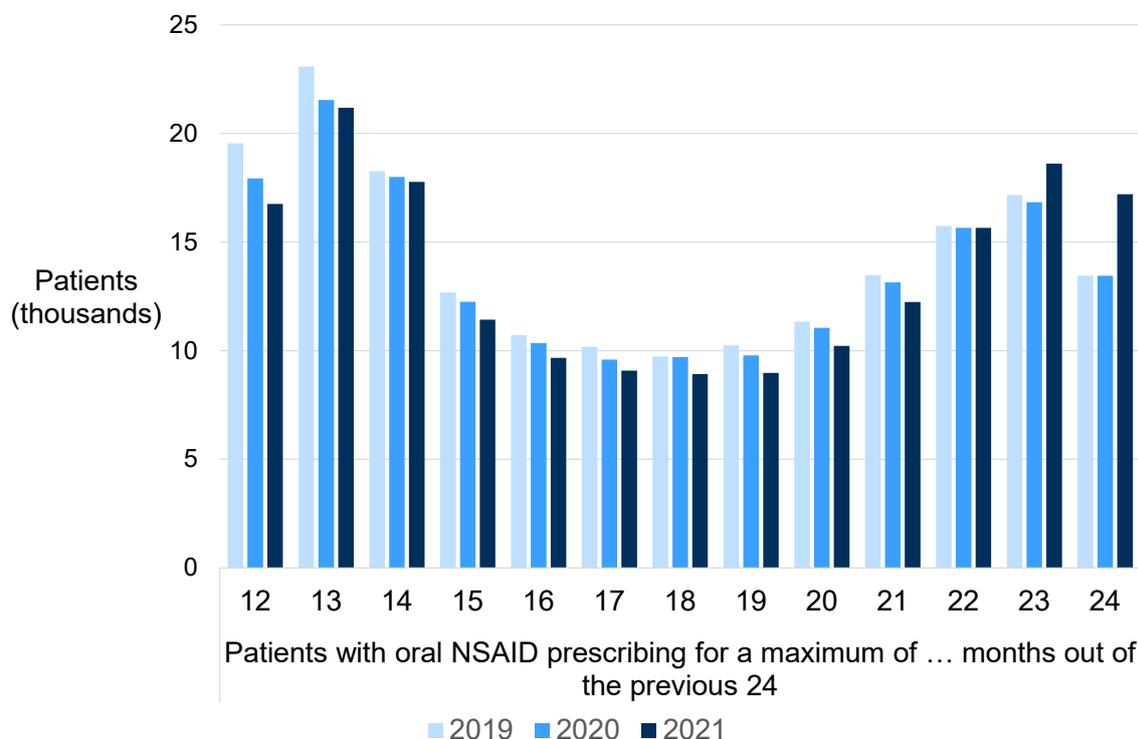
When broken down by practice, approximately half of all practices had 20 or more long-term NSAID users aged 65 and above.

**Figure 6. Patients aged 65 years and above who have received at least one prescription item for oral NSAIDs in year, by number of months prescribed NSAIDs in the previous 24 months, England, 2019 to 2021.**



For patients aged 65 years and above classed as long-term users under this proposed definition, the mean number of months in which these patients aged 65 years and above had been prescribed NSAIDs in the last 24 months was 17.9 months (Figure 7). As for the all-age population, the majority of long-term users tended to either have received prescription items for NSAIDs in just over 12 months, or just under 24 months, with 31.4% in 2020 having received items for between 12 and 14 months, and 29.0% having received items for between 22 and 24 months. Again, 2021 shows a notable increase at the upper end of the scale, with many more than would be expected based on the previous years' data having received prescription items for NSAIDs in 23 or all 24 of the previous 24 months.

**Figure 7. Patients aged 65 years and above who meet the proposed definition of long-term NSAID use by number of months prescribed NSAIDs in the previous 24 months, England, 2019 to 2021.**



In summary, if the working definition is applied only to those aged 65 years and above, proportionately more actual long-term users are likely to be missed than for the definition applied to all ages.

2. Increased risk from concurrent prescribing: long-term users of oral NSAIDs who are also prescribed diuretics and ACE inhibitors or Angiotensin II receptor blockers

A non-steroidal anti-inflammatory drug (NSAID), a renin-angiotensin system (RAS) drug, and a diuretic prescribed together can increase the risk of community acquired acute kidney injury if the patient develops an illness associated with hypovolaemia or hypotension<sup>13</sup>. The NHSBSA Medication Safety Indicators show hospital admissions in England for acute kidney injury where the patient had been prescribed a non-

<sup>13</sup> Polypharmacy Prescribing Comparators: Patients prescribed two or more medicines likely to cause Kidney injury (DAMN drugs), NHSBSA, 2017.

steroidal anti-inflammatory drug (NSAID), a renin-angiotensin system (RAS) drug and a diuretic. The most recent quarter (quarter 3 2021/22) reports 59 patients per 10,000<sup>14</sup> at increased risk. This means that for every 10,000 patients prescribed at least one of the three drugs (a non-steroidal anti-inflammatory drug (NSAID), a renin-angiotensin system (RAS) drug or a diuretic), 59 are prescribed all three. Of those at increased risk, 14 per 10,000<sup>5</sup> were admitted to hospital as an emergency, with a primary diagnosis of acute kidney injury.

The prescribing data shows (Figure 8) that of all adult patients who met the working definition for long-term NSAID use in 2021, 40,640 (8.2%) also had at least one month where NSAIDs were prescribed in combination with diuretics and ACE inhibitors or Angiotensin II receptor blockers. 4.5% of all long-term NSAID users had at least twelve months where NSAIDs were prescribed in combination, and 0.9% were prescribed all three medicine groups in all 24 months of the previous 24. Similar proportions were seen in 2019 and 2020, with details shown in Table 4.

When broken down by practice, 89% of practices had at least one patient who would meet the proposed definition for long-term NSAID use in 2021 who had been prescribed all three medicine groups for at least one month in the previous 24. Over one in five practices have at least ten of these patients.

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<sup>14</sup> NHS BSA Medication Safety Indicators available through 'Catalyst'. Accessed 13 May 2022. Definitions: Medication Safety Indicators Specification. August 2019, NHSBSA.

Figure 8. Patients who meet the proposed definition of long-term NSAID use and who were prescribed a non-steroidal anti-inflammatory drug (NSAID), a renin-angiotensin system (RAS) drug, and a diuretic, by number of months prescribed all 3 medicine groups in the previous 24 months, England, 2021.

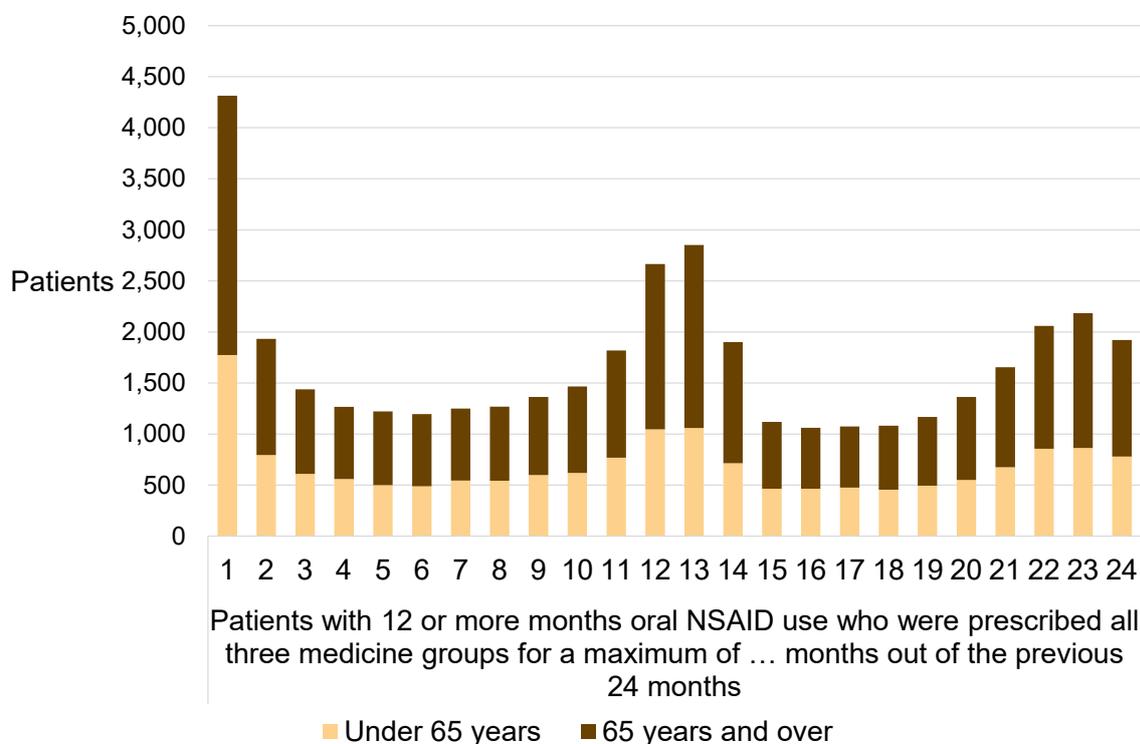


Table 4. Numbers and percentages of NSAID long-term users who were also prescribed diuretics and ACE inhibitors or Angiotensin II receptor blockers in England, 2019 to 2021

Year	Long-term NSAID users who were also prescribed diuretics and ACE inhibitors or Angiotensin II receptor blockers for <b>at least one month</b> in the previous 24		Long-term NSAID users who were also prescribed diuretics and ACE inhibitors or Angiotensin II receptor blockers for <b>at least 12 months</b> in the previous 24		Long-term NSAID users who were also prescribed diuretics and ACE inhibitors or Angiotensin II receptor blockers for <b>all 24</b> of the previous 24 months	
	Number	% of long-term NSAID users	Number	% of long-term NSAID users	Number	% of long-term NSAID users
2019	46,663	9.5%	24,722	5.0%	4,775	1.0%
2020	42,490	8.8%	22,709	4.7%	4,260	0.9%
2021	40,640	8.2%	22,105	4.5%	4,314	0.9%

### Summary of long-term NSAID use and numbers expected by an 'average' practice

Table 5 shows patient numbers for various key measures and scenarios at England level and for an 'average' GP practice of 10,000 patients. When applying the national figures to an 'average' practice, the following would be expected:

- Over 500 NSAID users
- Approximately 80 long-term NSAID users.
- About 30 long-term users aged 65 years and above.
- Between 5 and 10 long-term NSAID users with concurrent prescribing of diuretics and ACE inhibitors or Angiotensin II receptor blockers for at least one month in the previous 24 months
- Fewer than five with concurrent prescribing of diuretics and ACE inhibitors or Angiotensin II receptor blockers for at least 12 months in the previous 24 months

Table 5. Summary of numbers of NSAID users in England, and suggested numbers an average practice of 10,000 registered patients would expect

Numbers	England	'Average' GP practice
Registered population	60,744,002	10,000
Population aged 18+	48,481,482	7,981
Population aged 65+	10,663,170	1,755
NSAID users	3,253,221	536
Long-term* NSAID users	496,092	82
NSAID users aged 65+	713,051	117
Long-term* NSAID users aged 65+	177,737	29
Long-term* NSAID users who were also prescribed diuretics and ACE inhibitors or Angiotensin II receptor blockers for <b>at least one month</b> in the previous 24	40,640	7
Long-term* NSAID users who were also prescribed diuretics and ACE inhibitors or Angiotensin II receptor blockers for <b>at least 12 months</b> in the previous 24	22,105	4
Long-term* NSAID users who were also prescribed diuretics and ACE inhibitors or Angiotensin II receptor blockers for <b>all 24</b> of the previous 24 months	4,314	1

\* Based on the working definition of long-term NSAID use: patients who had had oral NSAIDs prescribed for 12 or more months in the previous 24 months

## **Contextual information from practice clinical searches**

### **Clinical search findings**

The indicator pilot described in this report was a partial pilot using qualitative methods only. However, in order to provide additional context to the pilot feedback, practices were asked to run simple clinical system searches (shown in Appendix E) and share the results of these with NCCID for collation and analysis. Fifteen of the 16 participating practices provided their search findings as requested, including one recently merged practice which had recently merged their administration and submitted two returns, therefore 16 clinical search findings have been analysed here. Each clinical search return is referred to as a pilot practice in this section.

There were a total of 165,711 registered patients aged 18 and above in the 16 returns combined, as of the end of January 2022. One practice did not return a population, therefore this was taken from the 1<sup>st</sup> February NHS Digital Patients Registered at a GP Practice publication<sup>11</sup>.

The aim of the searches was to understand the incidence and prevalence of CKD across practices, the size of the population being prescribed oral non-steroidal anti-inflammatory drugs (NSAIDs), and those with CKD with a low (<70mg/mmol) urine albumin to creatinine ratio.

There were 8,116 patients aged 18 or over from 16 pilot practices reported to be on the QOF CKD register at the end of January 2022, which is 4.90% of the pilot population, higher than the current national QOF average of 3.96%. This varied greatly across the practices, from 1.46% to 13.01%. Of this group, an average of 89.27% (7,245 patients) were aged 65 or over. Table 6 provides a summary of these results at practice level.

Table 6: Summary of CKD register clinical search results

Practice	Total population	Patients on the QOF CKD register	Patients on the QOF CKD register aged 65 or over (% of previous column)
1	16,591	918 (5.5%)	859 (93.6%)
2	8,025	370 (4.6%)	340 (91.9%)
3	5,808	166 (2.9%)	154 (92.8%)
4	8,298	234 (2.8%)	195 (83.3%)
5	7,047	104 (1.5%)	80 (76.9%)
6	9,480	163 (1.7%)	127 (77.9%)
7	12,025	1,564 (13.0%)	1,426 (91.2%)
8	11,370	740 (6.5%)	633 (85.5%)
9	19,537	285 (1.5%)	228 (80.0%)
10	13,229	538 (4.1%)	492 (91.4%)
11	6,910	507 (7.3%)	477 (94.1%)
12	11,571	617 (5.3%)	558 (90.4%)
13	9,800	654 (6.7%)	578 (88.4%)
14	6,288	270 (4.3%)	236 (87.4%)
15	6,745	398 (5.9%)	341 (85.7%)
16	12,987	588 (4.5%)	521 (88.6%)
<b>Total</b>	<b>165,711</b>	<b>8,116 (4.9%)</b>	<b>7,245 (89.3%)</b>

An average of 5.4% of adults in the pilot practices were currently prescribed oral NSAIDs, of whom 93.4% did not currently have an existing diagnosis of CKD. In this group (those on NSAIDs without existing CKD), an average of almost 67% were aged 65 or over (data only submitted by 15 practices), and this varied between practices from 22.6% to 94.3% (Table 7). To note that GP practice level interpretation of 'currently prescribed oral NSAIDs' varied throughout the clinical searches.

Table 7: Summary of NSAID prescribing clinical search results

Practice	Total population	Patients currently prescribed oral NSAIDs	Patients on NSAIDs without an existing diagnosis of CKD (% of previous column)	Patients on NSAIDs without an existing diagnosis of CKD aged 65 or over (% of previous column)
1	16,591	358 (2.2%)	344 (96.1%)	119 (34.6%)
2	8,025	188 (2.3%)	181 (96.3%)	51 (28.2%)
3	5,808	36 (0.6%)	36 (100.0%)	9 (25.0%)
4	8,298	389 (4.7%)	312 (80.2%)	73 (23.4%)
5	7,047	39 (0.6%)	7 (17.9%)	N/A
6	9,480	30 (0.3%)	29 (96.7%)	7 (24.1%)
7	12,025	375 (3.1%)	336 (89.6%)	169 (50.3%)
8	11,370	441 (3.9%)	382 (86.6%)	192 (50.3%)
9	19,537	3,618 (18.5%)	3,570 (98.7%)	3,367 (94.3%)
10	13,229	159 (1.2%)	155 (97.5%)	60 (38.7%)
11	6,910	190 (2.7%)	184 (96.8%)	118 (64.1%)
12	11,571	606 (5.2%)	600 (99.0%)	373 (62.2%)
13	9,800	984 (10.0%)	828 (84.1%)	560 (67.6%)
14	6,288	303 (4.8%)	287 (94.7%)	65 (22.6%)
15	6,745	195 (2.9%)	164 (84.1%)	73 (44.5%)
16	12,987	1,107 (8.5%)	1,005 (90.8%)	398 (39.6%)
<b>Total</b>	<b>165,711</b>	<b>9,018 (5.4%)</b>	<b>8,420 (93.4%)</b>	<b>5,634 (67.0%)*</b>

\* Practice marked N/A is excluded from the denominator for this percentage calculation

There were 572 patients (0.40% of the pilot practice population) who were newly diagnosed and added to the QOF CKD register in the last 12 months (only 14 practices submitted a response to this question), and 977 (0.72%) (13 practices only, one has been removed due to data quality concerns) were newly diagnosed and added in the last 24 months. Applying these averages to a 'standard practice' of

10,000 patients, approximately 40 newly diagnosed CKD patients would be added to the QOF register in a 12 month period.

5,305 patients in 15 practices (one removed due to data quality concerns) were on the QOF CKD register and had a low (<70mg/mmol) urine albumin to creatinine ratio, which equates to 3.4% of the total pilot population, and 67.3% of those on the CKD register. Of these 5,305 patients, 33.8% were clinically coded for moderate or severe frailty and 52.7% were over 80 years old. The vast majority (96.7%) of those with CKD and an ACR of <70mg/mmol with moderate or severe frailty were also reported by practices as being over 80 years old.

## Summary of key findings

- 1,917,102 patients are on the QOF register of patients aged 18 or over with CKD classification G3a-G5, representing 3.96% of the population.
- A similar CVDPREVENT indicator (same definition but different data collection methodology) has 3.7% as its most recent report prevalence value, and includes additional breakdowns showing higher prevalence in females, and as age increases.
- Clinical searches from pilot practices found that
  - 8,116 (4.90%) patients from 16 pilot practices were reported as being on the QOF CKD register at the end of January 2022.
  - 9,018 (5.4%) patients from 16 pilot practices were currently prescribed oral NSAIDs, with around 67% of these patients aged 65 years and over.
- In a 'standard practice' of 10,000 patients we would expect to see approximately 40 newly diagnosed CKD patients in a 12 month period.
- Findings relating to the NSHBSA data extract are summarised on page 18 of this report.

## Appendix 1 Data definitions and metadata

### Acknowledgements

We thank Joe Hamed (NHS Business Services Authority) for data expertise and support, and for providing the NSAID prescribing data extract summary (DR1706) from the NHSBSA Data warehouse.

<b>Summary</b>	NICE Indicator development programme: Chronic Kidney Disease For North East Quality Observatory Service (NEQOS) Data on oral non-steroidal anti-inflammatory drug (NSAID) use in England, 2019-2021
<b>Data Source</b>	NHSBSA Data warehouse
<b>Time Period</b>	Data from February 2017 to December 2021 is used to report patients situation in 2019, 2020 and 2021 according to their 24-month prescribing history.
<b>Dispensing in the community in England</b>	
This data is based on dispensing in the community in England that has been submitted to NHSBSA for reimbursement and excludes dispensing within hospital settings, which could include secure wards, and prisons.	
<b>Prescription products</b>	
Prescriptions products have been classified as Oral NSAIDs, diuretics, or RAS in accordance with the specification used in the NHSBSA / NHS-Digital 'medicines safety' dashboard. In particular see the specification for indicator 'AKI01' described on page 19 of the 'Medication Safety - Indicators Specification August 2019'.	
These are repeated below for convenience and detailed lists of each 'pharmaceutical presentation' included in each group is included in the 'drug list' worksheet of this file.	
This specification uses the structure of the British National Formulary (BNF) using the classification system prior to BNF edition 70. <a href="https://www.nhsbsa.nhs.uk/access-our-data-products/epact2/dashboards-and-specifications/medication-safety">https://www.nhsbsa.nhs.uk/access-our-data-products/epact2/dashboards-and-specifications/medication-safety</a>	
Oral NSAID	Refers to oral non-steroidal anti-inflammatory drugs. Includes all presentations from BNF chapter 10, section 01, paragraph 01 'Non-steroidal anti-inflammatory drugs' that also has one of the pharmaceutical forms specified in the drug list sheet corresponding to 'Oral' medicine.
Diuretic	Includes all presentations from BNF chapter 02, section 02 'Diuretics'.

ACEI_ARB	<p>refers to Renin Angiotensin System (RAS) drugs. Including BNF chapter 02, section 05, paragraph 05, sub-paragraph 01 'Angiotensin-converting enzyme Inhibitors' (ACE inhibitors); and, BNF chapter 02, section 05, paragraph 05, sub-paragraph 02 'Angiotensin-II receptor antagonists' (ARB)</p>
<b>Prescribing Organisations</b>	
<p><b>Data from all prescribing organisations in England has been included. These have been reported in two groups.</b></p>	
Any	<p>'Any' practice implies that a patient is classified according to all prescription items for which they have been identified. This view means that patient may appear to be longer term, or have fewer or shorter 'gaps' - where they have been using more than one prescribing organisation.</p> <p><b>Under this classification patients where practice level data is reported, patients can appear only once, against the most recent 'GP practice' from which they have received a prescription for any of the products above in the reporting year.</b></p> <p>This may mean that a patient who moves practice in December for example is not reported against the practice responsible for most of their prescriptions in the year.</p> <p>Data for patients with no identified GP prescribing in the period is not included.</p>
Within practice	<p>This groups all data that has been identified against a patient within each GP practice. This means that a patient could meet the rest of the criteria for any one (or more) practices that prescribed to them in the period, but they are <b>ONLY</b> flagged as meeting the criteria on the basis of data for each practice separately.</p> <p>This will exclude any prescribing from other prescribing organisations.</p> <p>This means a patient may appear to be 'shorter term' or have more or longer 'gaps' in prescribing, in periods when they have used more than one prescribing organisation. but this view corresponds to what a person analysing a practice might 'see' if only considering that practice's prescribing in isolation.</p> <p>Patients may be counted more than once, once for each practice within which they meet any criteria.</p>

Organisation breakdowns National and by GP practice.

GP Practice has been reported using the 'Any practice' classification along with intermediate levels of NHS hierarchy based on the current structure. But older practices that have closed may still be mapped to older parent organisations.

Patients have been assigned to the most recent practice that prescribed them Oral NSAIDs in the year in question. Where there was more than one practice the one with the highest, Items, then NIC, then alphabetically by code has been selected.

This data can be aggregated to higher levels of the organisation structure.

**Identified patient counts**

Patients data is based on where an NHS Number has been identified for a patient, this is based on Electronic Prescription Service (EPS) messages or paper forms scanned by machine.

A patient cannot always be identified for an item. The number of unidentified items is shown in the sheet 'unidentified items' this can change a little over time, as the mix of prescribers using EPS changes.

'Unidentified items' could have been prescribed to patients who have been identified in some cases, which could potentially cause apparent gaps in prescribing history.

As this data only includes prescriptions dispensed in the community, and prescribing that was dispensed within NHS Trusts, prisons, outside of England will also give rise to apparent gaps in prescribing history.

Data on items prescribed in England but dispensed in other parts of the UK has been included, but it is not common for patients to be identified using this data.

<b>Age group</b>	<p>Patient ages have been grouped according to the youngest age within the reporting period from all that were read from a prescription form for any of the products included in the drug list.</p> <p>Note that all prescriptions made to a patient aged 17 or under have been excluded, so patients aged 17 at the start of the year, will be included as age 18.</p> <p>Age cannot always be derived from scanned prescription images and NHSBSA uses other information in some cases, details of this are here <a href="https://www.nhsbsa.nhs.uk/sites/default/files/2018-02/180115%20Age%20Logic%20Summary%20Flow%20Chart%20-%20Revised%20Layout.pdf">https://www.nhsbsa.nhs.uk/sites/default/files/2018-02/180115%20Age%20Logic%20Summary%20Flow%20Chart%20-%20Revised%20Layout.pdf</a></p> <p>Prescription information where an NHS Number was identified but the age was not are included in the rows labelled 'age unknown'. Prior analysis has found that one of the leading causes of an unidentified age is where it has been written in a way that includes months, this is more likely to occur for younger age groups.</p> <p>Prescription Items from forms for which an age was successfully scanned but for whom a NHS_NUMBER was not identified have not been included in the main tables - these are included in the 'unidentified items' worksheet.</p> <p>Ages have been grouped into the following bands:  - 18 to 29, 30 to 39, 40 to 49, 50 to 59, 60 to 69, 70 to 79, 80 to 89, 90 and over  And  - 18 to 64 and 65 and over  Note that for "within" practice analysis if a patient appears in more than one practice, it is possible they will also appear with different ages (based on the minimum within each practice).</p>
<b>Durations</b>	<p>To classify patients by their history, each patient and month is considered separately. So for 2019 for example each patient may have up to 12 separate 24 month histories, each history is summarised by the count of the number of distinct months (from 1 to 24) in which the patient was prescribed Oral NSAIDs. This means that in any given year</p> <p>The overall history for a patient in a year is summarised by the maximum number of months for any month in the reporting year. For example a patient may have had 7 months of prescribing in the 24 months to January 2019, but by December 2019 that value may have increased to 13. The higher number has been used to classify the patient in that year.</p> <p>To calculate durations of combinations of Oral NSAID with ACEI_ARB and Diuretics, we first establish that the patient had 12 or month months of prescribing of Oral NSAID in the previous 24 months - at some point in the year.</p> <p>Then for those patients the maximum number of months in which they had all three medicine groups is counted. This maximum may occur in a different month in the reporting year.</p>

### **EPS Timings**

The "EPS\_TIMINGS" sheet includes unprocessed information as downloaded from the EPS system and will not match final processed or reimbursed prescriptions. The data included will not reflect any subsequent reclassification or changes that occur as a result of processing. This data uses the prescribed date and dispensed date as recorded on the EPS Message. This will reflect the design of source (GP and Pharmacy) Systems as well as how those systems are used by the organisations involved at each stage. This could lead to delays lags or inaccuracies in timing information.

EPS forms flagged as 'Repeat Dispensing' have been excluded from the 'prescribed date' timings, as the prescribed date will not vary.

EPS timings relate to either prescriptions prescribed in 2021 or those dispensed in 2021 only.

### **OTC NSAIDs**

NHSBSA data does not hold data on over the counter (OTC) purchases of Oral NSAIDs.

This may mean that a patient's "prescription history" does not completely describe their use of Oral NSAIDs.

In particular, especially where a patient is not exempt from the prescription charge and suitable OTC medicine is available and cheaper than the charge, then there is an incentive for a patient to use OTC medicine, and for a prescriber to recommend it.

## **Appendix 2 Caveats and notes**

### **Classifying patients as ‘within-practice’ or ‘any practice’**

Consideration was given to classifying patients as long-term NSAID users based on a ‘within-practice’ method; aggregating their prescribing habits at each practice they may have been registered at within the period separately, rather than looking at activity across all practices (‘any practice’). At a national level, the patterns shown by both were similar, but the ‘within practice’ method failed to identify some long-term NSAID users whose prescriptions were associated with more than one practice. The ‘any practice’ method was selected as the most accurate and therefore the most appropriate for this exploratory analysis. The ‘within practice’ method is likely to underestimate the number of long-term users; however it is likely to best reflect each practice’s ability to independently identify these patients.

### **Other options for counting prescription frequency**

The working definition as applied in this report is based on the number of months a patient was prescribed NSAIDs in the previous 24 months. Additional options looking instead at the number of forms a patient had received, and at the number of dispensed NSAID items they had received were also considered. Both of these alternative definitions identified more long-term NSAID users, however both methods are likely to have double counted patients and therefore overstated the frequency.

### **Exclusions**

Only oral NSAID prescriptions were considered in this analysis, with suppository and injectable NSAIDs excluded. Over-the-counter NSAIDs were also excluded.

Items not dispensed, disallowed and returned back, and items that were prescribed but not presented for dispensing or not submitted to NHS Prescription Services by the dispenser were excluded from the analysis.